

REMARKS

In response to the action of January 12, 2006, applicants asks that all claims be allowed in view of the amendment to the claims and the following remarks.

Claims 1-60 are now pending, of which claims 1-6 and 25-30 are independent. Claims 1-4 and 25-28 have been amended, and claims 49-60 have been added. Support for these amendments may be found in the application at, for example, page 10, line 10 to page 12, line 13 and FIG. 1. No new matter has been introduced.

Rejection under Section 102

Claims 1, 2, 25, 26, 43 and 44 were rejected as being anticipated by Chiang (U.S. Patent Application Publication No. 2002/0063674). Applicant requests reconsideration and withdrawal of the rejection because Chiang does not describe or suggest the subject matter of independent claims 1, 2, 25 and 26, as described more fully below.

Amended claim 1 recites a liquid crystal display device having, on an insulating substrate, a plurality of source signal lines, a plurality of gate signal lines, a plurality of pixels, and a source signal line driver circuit for driving the source signal lines. The source signal line driver circuit has a plurality of analog buffer circuits, and a switching circuit having switches is provided between the analog buffer circuits and the source signal lines. The plurality of source signal lines and the plurality of analog buffer circuits constitute a circuit group. A connection between one of the source signal lines and one of the analog buffer circuits is periodically switched to a connection between the one of the source signal lines and another one of the analog buffer circuits by any one of the switches.

Chiang, by contrast, discloses a source driver circuit having output buffers 212 connected to switches 214. See Chiang at FIG. 2 and paragraph [0028]. Notably, Chiang's source driver circuit is configured such that a particular output buffer is connected to a particular switch. See Chiang at FIG. 2. As such, Chiang does not describe or suggest a connection between one of the source signal lines and one of the analog buffer circuits that is periodically switched to a connection between the one of the source signal lines and other one of the analog buffer circuits by any one of the switches, as recited in amended claim 1.

Accordingly, for at least these reasons, applicant requests reconsideration and withdrawal of the rejection of claim 1 and its dependent claim 43.

Independent claims 2, 25 and 26, as amended, each recite features similar to those discussed above with respect to claim 1, and do so in the context of a liquid crystal display device (claim 2) and methods of driving liquid-crystal display devices (claims 25 and 26). Accordingly, for the reasons discussed above with respect to claim 1, applicant requests reconsideration and withdrawal of the rejection of independent claims 2, 25 and 26, as well as claim 44, which depends from claim 2.

Rejections under Section 103

Claims 3-24, 27-42 and 45-48 were rejected as being unpatentable over Chiang in view of Youn (U.S. Patent Application Publication No. 2002/0089485). Applicant requests reconsideration and withdrawal of the rejection because neither Chiang, Youn, nor any proper combination of the references, describes or suggests the subject matter of independent claims 3-6 and 27-30, as described more fully below.

Independent Claims 3, 4, 27 and 28 and Dependent Claims 9, 10, 15, 16, 21, 22, 33, 34, 40, 41, 45 and 46

Independent claims 3, 4, 27 and 28, as amended, each recite a connection between one of the source signal lines and one of the analog buffer circuits that is periodically switched to a connection between the one of the source signal lines and another one of the analog buffer circuits by any one of the switches, a feature similar to those discussed above with respect to claim 1. Claims 3 and 4 do so in the context of a liquid crystal display device, whereas claims 27 and 28 do so in the context of a method of driving a liquid-crystal display devices. As described above, Chiang does not describe or suggest a connection between one of the source signal lines and one of the analog buffer circuits that is periodically switched to a connection between the one of the source signal lines and another one of the analog buffer circuits by any one of the switches, as recited in claims 3, 4, 27 and 28.

Youn, which is cited in the action for disclosing a set of n periods that is periodically repeated in random timing, does not remedy the failure of Chiang to describe or suggest the subject matter of the independent claims.

Therefore, neither Chiang, Youn nor any proper combination of the references, describes or suggests a connection between one of the source signal lines and one of the analog buffer circuits that is periodically switched to a connection between the one of the source signal lines and another one of the analog buffer circuits by any one of the switches, as recited in amended claims 3, 4, 27 and 28. Accordingly, applicant respectfully requests reconsideration and withdrawal of the rejections of independent claims 3, 4, 27 and 28 and their dependent claims 9, 10, 15, 16, 21, 22, 33, 34, 40, 41, 45 and 46.

Independent Claims 5, 6, 29 and 30 and Dependent Claims 11, 12, 17, 18, 23, 24, 35, 36, 42, 47 and 48

Independent claim 5 recites a liquid crystal display device having, on an insulating substrate, a plurality of pixels, a plurality of source signal lines, a plurality of gate signal lines, and a source signal line driver circuit, the source signal line driver circuit having analog buffer circuits to drive the source signal lines. A switching circuit is provided between the analog buffer circuits and the source signal lines, where n source signal lines and n analog buffer circuits constitute a circuit group and n is a natural number that is equal to or larger than 2. A set of n periods is periodically repeated. In an r -th period where r is a natural number that satisfies $1 \leq r \leq n$, the switching circuit connects an m -th source signal line in the circuit group (where m is a natural number that satisfies $1 \leq m \leq n - r + 1$) to an $(m + r - 1)$ -th analog buffer circuit and an l -th source signal line (where l is a natural number that satisfies $n - r + 2 \leq l \leq n$) to an $(l - n + r - 1)$ -th analog buffer circuit, respectively.

As described previously with respect to claim 1, Chiang's source driver circuit is configured such that a particular output buffer is connected to a particular switch. See Chiang at FIGS. 2 and 3. Stated differently, a particular source signal line in Chiang is connected to a particular analog buffer using a particular switch. As such, Chiang discloses the m -th source signal line is connected to the m -th analog buffer circuit, and the l -th source signal line is connected to the l -th analog buffer circuit. Hence, Chiang does not describe or suggest a switching circuit that connects an m -th source signal line in the circuit group (where m is a natural number that satisfies $1 \leq m \leq n - r + 1$) to an $(m + r - 1)$ -th analog buffer circuit, as recited in claim 5. Nor does Chiang describe or suggest that the switching circuit connects an l -th source signal line (where l is a natural number that satisfies $n - r + 2 \leq l \leq n$) to an $(l - n + r -$

1)-th analog buffer circuit, as recited in claim 5. Further the action does not indicate where Chiang is alleged to disclose a switching circuit so configured. Rather, the action merely indicates:

Regarding claims 3-6, 27-30, Chaing [sic] discloses in fig. 2, 3. A liquid crystal display device having an display device having, on an insulating substrate, a plurality of pixels, a plurality of source signal lines (see source driver circuit 200 having a plurality of source signal lines (see $Q_i, Q_{i+1} \dots Q_{i+4}$), a plurality of gate signal lines (see 1102, 1104, 1106, fig. 10), and a source signal line driver circuit, the source signal line driver circuit having analog buffer circuits (212) to drive the source signal lines, wherein a switching circuit is provided between the analog buffer circuits (212) and the source signal lines, wherein n (n is a natural number that is equal to or larger than 2, because analog switches 214 [sic] larger than 2) source signal lines and n analog buffer circuits constitute a circuit group, and wherein the source signal lines in the circuit group connected to analog buffer circuits in the circuit group are switched every period by the switching circuit their connections to different circuits (see each switches 214 connected to each output are different, fig. 2).

See action at page 3, line 13 to page 4, line 2. Notably, there is no reference in the action to many of the features recited in claim 5. For example, the action does not refer to a switching circuit that connects an m -th source signal line in the circuit group (where m is a natural number that satisfies $1 \leq m \leq n - r + 1$) to an $(m + r - 1)$ -th analog buffer circuit connects an l -th source signal line (where l is a natural number that satisfies $n - r + 2 \leq l \leq n$) to an $(l - n + r - 1)$ -th analog buffer circuit, as recited in claim 5.

Hence, Chiang does not describe or suggest a switching circuit that connects, in an r -th period (r is a natural number that satisfies $1 \leq r \leq n$), an m -th source signal line (m is a natural number that satisfies $1 \leq m \leq n - r + 1$) in the circuit group to an $(m + r - 1)$ -th analog buffer circuit and an l -th source signal line (l is a natural number that satisfies $n - r + 2 \leq l \leq n$) to an $(l - n + r - 1)$ -th analog buffer circuit, respectively.

Youn, which is cited in the action for disclosing a set of n periods that is periodically repeated in a random timing, does not remedy the failure of Chiang to describe or suggest the subject matter of independent claim 5.

Therefore, neither Chiang, Youn nor any proper combination of the references, describes or suggests a switching circuit that connects, in an r -th period (r is a natural number that satisfies

$1 \leq r \leq n$), an m -th source signal line (m is a natural number that satisfies $1 \leq m \leq n - r + 1$) in the circuit group to an $(m + r - 1)$ -th analog buffer circuit and an l -th source signal line (l is a natural number that satisfies $n - r + 2 \leq l \leq n$) to an $(l - n + r - 1)$ -th analog buffer circuit, respectively, as recited in claim 5. Accordingly, applicant respectfully requests withdrawal of the rejections of claim 5 and its dependent claims 11, 17 and 23.

Independent claims 6, 29 and 30 each recite features similar to those discussed above with respect to claim 5, and do so in the context of a liquid crystal display device (claim 6) and methods of driving liquid-crystal display devices (claims 29 and 30). Accordingly, for the reasons discussed above with respect to claim 5, applicant requests reconsideration and withdrawal of the rejection of independent claims 6, 29 and 30, as well as their dependent claims 12, 18, 24, 35, 36, 42, 27 and 48.

Dependent Claims 7, 8, 13, 14, 19, 20, 31, 32, 37 and 38

Claims 7, 8, 13, 14, 19, 20, 31, 32, 37 and 38 each depend from claim 1, 2, 25 or 26. At least for the reason of that dependency and the reasons noted above with respect to independent claims 1, 2, 25 and 26, applicant requests reconsideration and withdrawal of the rejection of claims 7, 8, 13, 14, 19, 20, 31, 32, 37 and 38.

New Claims 49-60

New claims 49-60 each depend from one of independent claims 1-6 or 25-30, respectively. At least for the reason of that dependency and the reasons noted above with respect to independent claims 1-6 and 25-30, applicant submits that claims 49-60 are allowable.

Conclusion

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the

amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.


Applicant submits that all claims are in condition for allowance.

Pursuant to 37 CFR §1.136, applicant hereby petitions that the period for response to the action dated January 12, 2006, be extended for one month to and including May 12, 2006.

The fee in the amount of \$720.00 in payment of the excess claim fees (\$600.00) and the Petition for Extension of Time fee (\$120.00) is being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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